

ABSTRACT OF THE DISCLOSURE

1 In accordance with an aspect of the invention, a semiconductor
2 processing method of forming field effect transistors includes forming a
3 first gate dielectric layer over a first area configured for forming p-type
4 field effect transistors and a second area configured for forming n-type
5 field effect transistors, both areas on a semiconductor substrate. The
6 first gate dielectric layer is silicon dioxide having a nitrogen
7 concentration of 0.1% molar to 10.0% molar within the first gate
8 dielectric layer, the nitrogen atoms being higher in concentration within
9 the first gate dielectric layer at one elevational location as compared to
10 another elevational location. The first gate dielectric layer is removed
11 from over the second area while leaving the first gate dielectric layer
12 over the first area, and a second gate dielectric layer is formed over the
13 second area. The second gate dielectric layer is a silicon dioxide
14 material substantially void of nitrogen atoms. Transistor gates are
15 formed over the first and second gate dielectric layers, and then p-type
16 source/drain regions are formed proximate the transistor gates in the first
17 area and n-type source/drain regions are formed proximate the transistor
18 gates in the second area.

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